

## Highlights

# The Virginia Regional Environmental Management System (V-REMS) Energy Efficiency Project

## Energy Efficiency Project Goal:

**To improve the energy efficiency of V-REMS participants' operations in order to reduce energy expenditures, air pollution, and greenhouse gas emissions.**

## Background:

Americans have many opportunities to reduce their energy consumption and have good reasons to do it. High rates of energy consumption drive energy costs up and pollute the air. Solutions currently exist that can significantly improve the efficiency with which facilities use energy while maintaining or reducing costs below current levels.



**Example:** Replacing one incandescent light bulb with an energy-saving compact fluorescent bulb leads to 1,000 lbs. less carbon dioxide and \$67 savings on energy costs over the bulb's lifetime.

## Quick Facts: Energy Efficiency

- Improving energy efficiency involves the implementation of a technology or process that uses less energy to achieve the same quality of output.
- Cost savings associated with improved energy efficiency should be calculated over the entire lifespan of the technology or process since savings extend well beyond the first year of use.
- A decrease of only 1% in industrial energy use in the U.S. would save the equivalent of about 55 million barrels of oil per year, worth about \$4 billion.
- ENERGY STAR is a joint program of the U.S. EPA and the U.S. Department of Energy that designates energy efficient products and practices to inform energy efficient decisions.



V-REMS participants discuss energy efficiency opportunities.

## The Challenge: Understanding Options and Making the Business Case for Change

Although improving energy efficiency is attainable through cost-effective measures, many organizations do not understand the range of efficiency options available to them and are unaware of the economic and environmental business cases for pursuing those options.

## A Solution: Leveraging the V-REMS Partners' Collective Experience

Since 2004, V-REMS partners have committed to sharing their respective energy efficiency project results and experiences with each other. This information exchange has led to the replication of a number of energy efficiency projects among V-REMS partners. For example, the success of one V-REMS partner's lighting efficiency initiative inspired a number of other partners to pursue similar initiatives, leading to significant cost savings and emissions reductions. V-REMS partners find that they are more inclined to pursue an energy efficiency project if they know that it has already been tested by a local community partner.



The Virginia Regional Environmental Management System (V-REMS) partnership joins over 35 public (federal, state, county, and local) and private organizations in the greater Richmond area to address complex community and environmental issues through an innovative partnership approach. The partnership strengthens community relationships and reduces air, water, and waste emissions, promoting environmental sustainability in the areas where

its partners operate. The Energy Efficiency project is one of the many environmental initiatives that V-REMS pursues. More details on the V-REMS Energy Efficiency Project and additional facts sheets profiling V-REMS efforts related to Diesel Bus Retrofits, E-85 Fueling Stations, and Stormwater can be found at <http://www.peercenter.net/RegionalCollaborations.cfm>.

## Highlights

### The V-REMS Energy Efficiency Project

*“The V-REMS partnership’s energy efficiency workgroup allowed us at the DSCR to learn about Fort Lee’s Lighting Efficiency Initiative, which inspired us to improve the energy efficiency of our own lighting systems, leading to an annual savings of at least \$337,701.”*

Jimmy Parrish,  
Defense Supply Center  
Richmond

#### Accomplishments\*:

- Fort Lee replaced inefficient fluorescent lighting with modern lights leading to an annual energy savings of \$79,000. The Fort also purchased a large bulb crusher that allowed it to achieve a major secondary benefit to its energy efficiency program: the recycling of 323 grams of mercury and 49 tons of bulbs and ballasts in 2004-5. The Fort presented its project successes to the V-REMS partnership at the February 2006 V-REMS meeting.
- Inspired by Fort Lee’s tremendous successes, the Defense Supply Center Richmond (DSCR) installed motion sensors and timed light switches in their facilities leading to an annual energy savings of \$337,701. Additionally, the DSCR has also replaced out 24,000 inefficient bulbs, recovering 288 grams of mercury in a small bulb crusher. The DSCR projects that it will change out an average of 15,000 bulbs annually, allowing it to recycle an average of 180 grams of mercury per year.
- Fort AP Hill retrofitted over 3,600 lighting fixtures in over 60 buildings at a savings of \$56,000 per year. The Fort also installed room occupancy sensors, insulation blankets on hot water heaters, and a geothermal heat pump to reduce energy usage.
- The Virginia National Guard has improved energy efficiency by replacing ceilings, roofs, windows, and two older boilers.
- DuPont hosted a plant-wide energy fair to educate its employees on the use of energy efficient products and encourage the purchase of ENERGY STAR products. The DSCR attended the fair and presented its Global Electric Motors car at the event, sparking interest from DuPont.

\* In some cases, the accomplishments identified are the results of individual V-REMS partners’ voluntary efforts. In others, environmental projects were already in effect when organizations joined V-REMS and experiences were shared. In most instances, partners identified common problems or needs or solutions, shared their experiences, and developed joint projects resulting in environmental improvements.



Fort Lee’s bulb crusher recycled 323 grams of mercury in 2004-5

*“Fort Lee’s energy efficiency improvements led to major savings for the Fort – these savings can be redirected towards helping the Army accomplish its mission.”*

Carol Anderson, Fort Lee

#### Energy Efficiency Project: Metrics of Success

The following calculations represent the aggregate savings from energy efficiency activities at Fort Lee, the DSCR, and Fort AP Hill. The emissions calculations were estimated using the emissions calculator at: [http://www.cleanerandgreener.org/resources/emission\\_reductions.htm](http://www.cleanerandgreener.org/resources/emission_reductions.htm). As additional partners implement and report on their energy efficiency projects, the numbers will be added to the partnership’s total.

- **7,880 MWh of electricity saved.**
- **\$472,701 saved in annual energy expenditures.**
- **Reductions in air emissions from avoided electricity production include:**
  - **1,970,134,242 lbs. CO<sub>2</sub> emissions;**
  - **28,996 lbs. VOCs;**
  - **4,093,304 lbs. NO<sub>x</sub>;**
  - **9,389,953 lbs. SO<sub>x</sub>;**
  - **186,865 lbs. carbon monoxide;**
  - **151,425 lbs. particulates; and,**
  - **13,204 grams mercury.**
- **Over 11 partners involved in energy efficiency workgroup.**

**V-REMS Partnership Sponsors:**  
U.S. Department of Defense  
Defense Supply Center Richmond  
White House Council on Environmental Quality

**For More Information:**  
<http://www.peercenter.net/RegionalCollaborations.cfm>  
Jimmy Parrish: [jimmy.parrish@dla.mil](mailto:jimmy.parrish@dla.mil), (804) 279-6949.  
Steve Wassersug: [swassersug@getf.org](mailto:swassersug@getf.org), (239) 489-1647.  
Brian Matthey: [bmatthey@getf.org](mailto:bmatthey@getf.org), (703) 379-2713.